

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-11. Canceled

12. (Currently amended) A tool for measuring one or more fluid properties that comprises:

a body having an associated volume through which a fluid may pass;

a known surface fixed within the volume to contact the fluid; and

an acoustic transducer affixed to the body and configured to receive acoustic signal

reflections and reverberations from the known surface; and

a processor coupled to the acoustic transducer, wherein the processor calculates

theoretical acoustic signal reverberations by combining a frequency domain

response of the acoustic signal reflection with a theoretical frequency domain

response of the known surface, and wherein the processor relates the received

acoustic signal reverberations with the theoretical acoustic signal reverberations to

determine the one or more fluid properties.

13. (Currently amended) The tool of claim 12, wherein the known surface is metallic.

14. (Currently amended) The tool of claim 12, wherein the known surface is steel.

15. (Canceled)

16. (Currently amended) The tool of claim ~~15~~12, wherein the known surface is a metal disk.

17. (Canceled)

18. (Currently amended) The tool of claim ~~17~~12, wherein the one or more fluid properties includes acoustic impedance.

19. (Currently amended) The tool of claim 12, wherein the acoustic transducer is further configured to generate acoustic signals that impinge on the known surface to cause said acoustic signal reflections and reverberations.

20. (Currently amended) The tool of claim 19, wherein the ~~tool couples to a processor that~~ measures a time delay between the generation of the acoustic signals and the receiving of the acoustic signals to determine an acoustic velocity.

21. (Canceled)

22. (Currently amended) The tool of claim ~~21~~12, wherein the one or more fluid properties includes fluid density.

23. (New) A tool for measuring one or more fluid properties that comprises:
a body having an associated volume through which a fluid may pass;
a surface fixed within the volume to contact the fluid; and
an acoustic transducer affixed to the body and configured to receive acoustic signal reflections and reverberations from the surface,
wherein the surface has opposite sides configured to contact the fluid, and wherein the surface is a metal disk.

24. (New) The tool of claim 23, further comprising a processor coupled to the acoustic transducer, wherein the processor calculates theoretical acoustic signal reverberations by combining a frequency domain response of the acoustic signal reflection with a theoretical frequency domain response of the metal disk, and wherein the processor relates the received acoustic signal reverberations with the theoretical acoustic signal reverberations to determine the one or more fluid properties.

25. (New) The tool of claim 23, wherein the tool couples to a processor that measures a time delay between the generation of the acoustic signals and the receiving of the acoustic signals to determine an acoustic velocity.

26. (New) The tool of claim 23, wherein the one or more fluid properties includes acoustic impedance.

27. (New) The tool of claim 23, wherein the acoustic transducer is further configured to generate acoustic signals that impinge on the metal disk to cause said acoustic signal reflections and reverberations.

28. (New) The tool of claim 23, wherein the one or more fluid properties includes fluid density.

29. (New) A tool for measuring one or more fluid properties that comprises:
a body having an associated volume through which a fluid may pass;
a metal plate with opposite sides configured to contact the fluid, the plate being fixed within the volume to contact the fluid; and
an acoustic transducer affixed to the body and configured to receive acoustic signal reflections and reverberations from the metal plate.

30. (New) The tool of claim 29, further comprising a processor coupled to the acoustic transducer, wherein the processor calculates theoretical acoustic signal reverberations by combining a frequency domain response of the acoustic signal reflection with a theoretical frequency domain response of the metal plate, and wherein the processor relates the received acoustic signal reverberations with the theoretical acoustic signal reverberations to determine the one or more fluid properties.

32. (New) The tool of claim 29, wherein the tool couples to a processor that measures a time delay between the generation of the acoustic signals and the receiving of the acoustic signals to determine an acoustic velocity.

33. (New) The tool of claim 29, wherein the one or more fluid properties includes acoustic impedance.

34. (New) The tool of claim 29, wherein the acoustic transducer is further configured to generate acoustic signals that impinge on the metal plate to cause said acoustic signal reflections and reverberations.

35. (New) The tool of claim 29, wherein the one or more fluid properties includes fluid density.